

Chapter 1

THE BATTLEFIELD

This chapter covers the basic doctrine fundamentals of aviation units on the battlefield. It discusses the CSS needed by aviation units to function effectively and sustain combat capability. It also discusses the need for modularity in AVIM units, the combat mission for aviation maintenance units and the threat forces most likely to be used against them.

SECTION I – DOCTRINE FUNDAMENTALS

POWER PROJECTION

1-1. The dramatically changing world environment during the past several years has led to a revision of the national military strategy that calls for fewer forward deployed forces and greater reliance on CONUS-based contingency forces. Hence, the centerpiece for this new strategy is rapid force projection to meet growing regional threats and crises. The credibility of our new strategy depends on our ability to deploy, in a timely manner, an appropriate military force that is versatile, lethal, and sustainable. The Army must be prepared to rapidly deploy up to a five-division contingency force in support of national military objectives. The Army has responded to this mission with a program that will support this new mobility-oriented strategy. This program, called the ASMP, is designed to lead to the development of a total fort-to-foxhole system that provides the necessary capability to meet the deployment goals of the CONUS-based contingency force.

1-2. FM 3-0(100-5) is the Army's keystone doctrinal manual. It outlines how the Army will fight with CONUS-based contingency forces.

SUSTAINMENT IMPERATIVES

1-3. Sustaining the battle will require aviation commanders and staffs to adhere to the CSS characteristics—responsiveness, simplicity, flexibility, attainability, sustainability, survivability, economy, and integration. These characteristics apply to war, military operations other than war, and stability operations and/or support operations and are discussed in detail in FM 3-0(100-5) and FM 4-0(100-10).

RESPONSIVENESS

1-4. Responsiveness is the key characteristic of CSS. It means providing the right support in the right place at the right time, and the ability to meet changing requirements on short notice. Responsiveness includes the ability to anticipate operational requirements. Aviation logisticians must anticipate future events and requirements by understanding the aviation commander's plan and by foreseeing events as operations develop. While continuing to support current operations, they must plan for future operations and attempt to foresee unexpected changes in the course of the battle. This

involves identifying, accumulating, and maintaining the minimum, assets, capabilities, and information necessary to meet support requirements. On the other hand, the force that accumulates enough material and personnel reserves to address every possible contingency usually cedes the initiative to the enemy. Additionally, Corps aviation logisticians must focus on a period at least 48 to 72 hours in the future. They must also anticipate events by ensuring that the aviation logistics structure retains the flexibility to respond quickly to change.

SIMPLICITY

1-5. Simplicity means avoiding complexity in both planning and executing aviation maintenance and logistics operations in support of CSS operations. Mission orders, drills, rehearsals, and SOPs contribute to simplicity.

FLEXIBILITY

1-6. The key to flexibility lies in the expertise for adapting logistics structures and procedures of CSS to changing situations, missions, and concepts of operations. Logistics plans and operations must be flexible enough to achieve both responsiveness and economy. Flexibility may include improvisation. Improvisation is the ability to make, invent, or arrange for what is needed from what is at hand. Improvised methods and support sources can maintain CSS continuity when the preferred method is undefined or not usable to complete the mission. Improvisation must be a hallmark of aviation logistics. Aviation logisticians must seek new or imaginative solutions to problems. Routine or traditional solutions that do not solve problems must be bypassed. Extraordinary methods may be necessary to get things done.

ATTAINABILITY

1-7. Attainability is generating the minimum essential supplies and services necessary to begin operations. Commanders determine that minimum levels of support are acceptable to initiate operations.

SUSTAINABILITY

1-8. Sustainability is the ability to maintain continuous support during all phases of campaigns and major operations. Aviation logistics planners anticipate logistics requirements over time and synchronize the delivery of minimum sustainment stocks throughout the operation.

SURVIVABILITY

1-9. Being able to protect support functions from destruction or degradation equates to survivability. Robust and redundant support contributes to survivability, but may run counter to economy.

ECONOMY

1-10. Resources are always limited. Economy means providing the most efficient support to accomplish the mission. Commanders consider economy in prioritizing and allocating sources. Economy reflects the reality of resource shortfalls, while recognizing the inevitable friction and uncertainty of military operations.

INTEGRATION

1-11. Integration consists of synchronizing CSS operations with all aspects of Army, joint, interagency, and multinational operations. The concept of operations achieves integration through a thorough understanding of the commanders' intent and synchronization of the CSS plan. Aviation logistics is an integral part of aviation operations at all echelons. Proper integration of sustainment operations with the operations of the aviation force is critical. Aviation logistics units must be organized to execute "fix forward" doctrine while providing the aviation commander the greatest possible freedom of action.

SECTION II – COMBAT SERVICE SUPPORT OF AVIATION OPERATIONS

PLANNING

1-12. The battlefields of all potential theaters of operation pose great and varied challenges, not only to the combat force that may fight on them, but also to the CSS units that will sustain the combat force. U.S. forces must make the most of what is available to them wherever they are fighting. They must take advantage of host nation resources through formal agreements and pursue ad hoc measures during operations, as well as forage and use captured materiel. These factors are essential to the success of any sustained operation.

FLEXIBILITY

1-13. The fluid conditions of future battlefields will require that logistics supporters are responsive and flexible—to take the initiative and anticipate needs. Aviation logistics commanders must understand the aviation commanders' operational plans to perform responsively and must accept deviation from these plans as routine. Aviation logistics commanders may, at times, need to devise innovative ways to support the tactical plan and lessen the risks. Flexibility is the key to maintenance operations, and it allows commanders to be responsive and flexible by providing mission-ready aircraft for combat operations.

COORDINATION

1-14. Effective communications must be maintained between aviation units, the supporting staffs, and AVIM units to determine CSS requirements and to coordinate support activities. Priorities for CSS must be established based on the tactical plan. Close coordination is also necessary to ensure that the units with the highest tactical priority receive their support first. Effective communications and coordination will enable the support commander to emphasize the flow of supplies rather than the buildup of stocks. Stockage of critical supplies near points of anticipated consumption may be necessary to permit continued operations in case the CSS system is disrupted, but such action should not impede the mobility of the maneuver battalions. Constant and complete coordination is necessary to ensure effective and integrated transportation support.

DOCTRINE MANUALS

1-15. Military operations doctrine requires that all leaders understand the concepts and requirements of any operation. FM 3-0(100-5) is the Army's manual that fully explains military operations doctrine. FM 3-50(100-7) is the Army's manual on how the Army supports the CINC. FM 4-0(100-10) is the Army's manual for CSS. FM 3-4.100(1-100) is

the principal manual for combat aviation operations. Aviation logisticians must understand the doctrine laid out in these manuals as thoroughly as they understand the technical aspects of their jobs.

COMBAT MISSION

1-16. The combat mission of aviation units must remain the foremost consideration in the functions of AVUM and AVIM units. Resources and priorities must be tailorable to changing combat situations. Units must be flexible enough to support from any base arrangement and be able to survive and to accomplish the mission. Maintenance, supply, and other support elements must be far enough forward to be instantly responsive to the requirements of aviation units.

OFFENSIVE OPERATIONS

1-17. The primary purpose of maintenance support of offensive operations is to maintain the momentum of the attack. Maintenance managers must prepare and organize for offensive operations based on the particular type of tactical operations to be supported, the nature of the battlefield, and the need for flexibility. To make these judgments, maintenance managers need to weigh many considerations. Offensive operations must provide for—

- Forward positioning of essential maintenance repair parts and supplies.
- Maximum use of MST in forward areas.
- Increased use of airlift and airdrop for resupply of essential repair parts and supplies.
- Adequate communications between the supported and the supporting unit.
- Proper means to ensure that maintenance preparation for the offense does not interfere with tactical plans and operations.

DEFENSIVE OPERATIONS

1-18. Defensive operations are aimed at creating opportunities to go to the offense. The defense can be static or dynamic. The objective is to cause the enemy attack to fail or to break the momentum of the attack and to provide opportunities to initiate an offensive operation. Maintenance managers work with tactical commanders to ensure they can effectively support the wide range of operations available to the tactical commander. Maintenance managers should make maximum use of support teams to repair equipment as far forward as possible. They should stockpile limited amounts of essential repair parts and supplies in the forward main battle area. They must keep their units mobile.

RETROGRADE OPERATIONS

1-19. Retrograde operations serve to gain time, avoid combat under adverse conditions, or draw the enemy into unfavorable positions. Movement to the rear or away from the enemy can be difficult and risky and must be well organized and well executed. Support may be provided to units involved in defending, delaying, attacking, or withdrawing. Efforts should be made to establish maintenance elements in-depth and rearward, to limit the flow of maintenance repair parts and supplies forward to only the most combat-essential elements, and to keep supply and evacuation routes open. Evacuation of supplies and equipment to planned fallback points along withdrawal routes is important. Also important is providing supplies and evacuation at night and during periods of limited visibility.

STABILITY OPERATIONS AND/OR SUPPORT OPERATIONS

1-20. Stability operations and/or support operations will be the most challenging operation for aviation maintenance managers to support. Stability operations and/or support operations can range from support to federal, state, and local governments; disaster relief; nation assistance; and drug interdiction to peacekeeping; support for insurgencies and counterinsurgencies; noncombatant evacuation; and peace enforcement. Maintenance managers may conceivably be supporting two or more of these operations simultaneously. This will require maintenance managers to be more flexible and innovative in their means of support. Aviation units may be staged into and fight in an AO on a varying time schedule. Depending on the type of operation, the configuration of the aviation task force may vary from a company to a “provisional” aviation brigade. Units may deploy into areas where there may not be U.S. or allied bases. The local population attitudes may vary from friendly acceptance to open hostility toward the presence of U.S. forces. This factor will influence the composition of the aviation force, which in turn will dictate the composition of the aviation maintenance package. To support these types of operations, maintenance managers will need to provide maintenance modules (groups of selected MOSs, repair parts, and equipment) to support a particular operation. If the operation escalates or the mission changes, the remaining aviation assets may be employed in the areas of operation.

MODULARIZATION

1-21. The Army must be prepared to fight a general war yet have the “flexibility” in force structure and organizational design to support limited war and stability operations and/or support operations. The aviation brigade is the aviation “general war” force configuration that the aviation maintenance force structure and organizational designs must be specifically tailored to support. “Modular” maintenance unit designs will allow reconfiguration of the general war AVIM design to support the aviation task force designed for the conduct of limited war. For stability operations and/or support operations, the maintenance organization design must contain sufficient redundancies in personnel and equipment to allow adjustment to implement “fix forward” doctrine.

AVIATION INTERMEDIATE MAINTENANCE DESIGN

1-22. A modular AVIM design is intended to link maintenance structure and approximate maintenance capability within maintenance units to specific aviation units being supported. Maintenance commanders, their staffs, and other logistics planners have to be intimately familiar with the organization and capability of their AVIM units to maximize the operational flexibility inherent to the AVIM modular organizational designs. While the TOEs and MTOEs reflect the organization and resources necessary to support general war, commanders no longer have to fight their units in this configuration. They have the capability of rearranging organizational modules to best satisfy operational requirements.

PLANNING

1-23. In any scenario, two primary purposes of predeployment logistics planning are to define the concept for aircraft maintenance support and to identify the aircraft maintenance capability necessary to support the designated aviation force. These determinations will be made based on the composition of the aviation task force (aviation units and numbers/types of aircraft) and how the aviation units are to be operationally employed.

NONINTERCHANGEABLE AVIATION INTERMEDIATE MAINTENANCE UNITS

1-24. It must be noted that AVIM units are specifically designed to support a designated aviation brigade and its projected modernization over time. Time lines for the modernization of AVIM units, and the units they support, vary substantially and are subject to frequent change. For this reason, AVIM units (and elements within AVIM units) are frequently not "interchangeable" and should always be deployed with the aviation brigade (units) they are designed to support. Failure to maintain intended supporting-to-supported relationships greatly increases the risk of personnel and equipment incompatibilities in the maintenance task organization. As a designated aviation brigade is task organized to its "provisional" design, modular definition within the MTOE will permit the adjustment of maintenance capability to accommodate the provisional aviation brigade requirements.

RECONSTITUTION

1-25. During protracted conflicts, units will need to be reconstituted from remaining assets in the field as well as with replacement personnel and equipment. In the same way, AVUM and AVIM units will need to be reconstituted from existing assets. This will best be done using the modularity concept. As operational aviation companies are reconstituted, the maintenance module to support that force will be built to match the maintenance need. As aviation brigades are reconstituted, the necessary maintenance company must be available to support this task force. More information on reconstitution is covered in Appendix M.

SECTION III – THE THREAT TO AVIATION MAINTENANCE

AVIATION MAINTENANCE VULNERABILITY

1-26. Aviation maintenance units and facilities in the field have distinct signatures. Reconnaissance units or observers can easily recognize the characteristic shape and configuration of vehicles and equipment under normal conditions. Thermal emissions, energy output, electronic signals, and noises associated with maintenance work contribute to the identification of aviation maintenance locations. The sites are vulnerable not only to weapons but also to electronic countermeasures, disruption of lines of communications, and even to environmental conditions like humidity, temperature extremes, and weather. Environmental conditions may impede mission completion and increase the effect of CBR or incendiary weapons. Directed-energy weapons can destroy electronic equipment with no visible damage. Aircraft at the facility, both on the ground and in flight, increase the facility's signature and priority for threat targeting. Forward maintenance and BDAR require deployed maintenance teams who face the same threat as the unit they are supporting.

CHARACTERISTICS OF THREAT FORCES

1-27. Aviation maintenance activities are susceptible to disruptions and are vulnerable to military actions in all levels of conflict. During major conventional wars, aviation maintenance units are likely to be located but may not be high-priority targets. During stability and/or support operations, the enemy is more likely to strike softer logistics targets such as aviation maintenance units. Some characteristics of possible threat forces follow:

- Regional threat military forces will initially outnumber allied and U.S. forces. Soviet-trained forces will continue to follow older Soviet tactical doctrine. This stresses combined arms operations, artillery, careful planning, surprise, shock action, and adherence to the plan.
- Threat forces worldwide will seek to narrow technology gaps with both regional and global powers. American, European, and former Soviet weapons may be reverse-engineered copied, license-built, or purchased. Advanced weapon technology may be incorporated in locally designed and built arms. Older weapons may be modified with advanced-technology fire-control systems, protection packages, and warheads.
- Threat forces may seek to prevent deployment of U.S. forces through interdiction of lines of communication. Several regional powers have submarine forces, capable air forces, and SRBM. U.S. Army aviation maintenance units may encounter hostile fire on debarkation.
- Regional powers may seek to gain regional air superiority. This presents problems for deploying Army aviation and maintenance units. Operations under hostile air superiority or parity will increase the maintenance workload while self-protection becomes an increased priority.
- Ground operations will emphasize mobility and depth of attack to disrupt AAs and destroy U.S. forces before they can be committed. Threat forces may be able to carry out rapid combined arms maneuvers in offensive operations.
- Terrorist or guerrilla forces will seek out targets of opportunity with low risk of return fire. Rear area units such as aviation maintenance present high-value, low-risk targets.
- Threat forces may use CBR warfare agents against U.S. forces specifically or against allied positions and support areas indiscriminately. Proliferation of CBR production capability in developing countries increases the likelihood of its use.

TYPES OF THREAT

ENEMY

1-28. Hostile forces will attack aviation maintenance through attempts to:

- Disrupt or negate C³.
- Disrupt or destroy the maintenance facility, its personnel, and its equipment.
- Destroy or damage aircraft in the air and on the ground.
- Disrupt or destroy logistic supplies, fuels, and parts.
- Curtail or sever transportation links.
- Contaminate or render useless water, foods, fuels, oils, and soils.
- Neutralize or disturb electronic devices used to measure, communicate, navigate, and control.

FRIENDLY OR NEUTRAL

1-29. The growing complexity of modern warfare and the sophistication and lethality of weapons increase the problem of friendly fire. The requirement for camouflage, concealment, and deception for survival also increases the possibility of poor recognition by friendly forces. Joint and coalition operations increase the likelihood of electromagnetic interference from radars, communications, and navigation equipment, not to mention friendly electronic warfare operations.

THREAT CAPABILITIES

1-30. Aircraft maintenance units may create large signatures for hostile intelligence, reconnaissance, surveillance, and target acquisition systems. Hostile forces may use missiles, artillery, fighter-bombers, armed helicopters, mobile armor forces, DEW, REC, or special operations units to attack aviation maintenance units. While the range of weapons decreases in stability operations and/or support operations, the lethality to our units remains high.

AIR THREAT

1-31. Aircraft and missile forces operating from land bases or seaborne platforms can deliver weapons ranging from NBC to high-explosive, fragmentation, and incendiary warheads. Delivery means are free-fall (dumb) bombs, ballistic rockets, precision-guided munitions (smart to brilliant), and cannon/gun-fired projectiles.

GROUND FORCES

1-32. Air- and sea-delivered ground forces can attack rear area facilities with howitzers, mortars, and direct-fire weapons. They can lay mines, set ambushes, conduct REC, or provide targeting information to other forces.

ARTILLERY

1-33. Conventional artillery (howitzers, guns, and mortars) can reach up to 50 kilometers with extended-range ammunition. Multiple-rocket launchers achieve similar ranges with standard rockets and fewer launchers for area saturation. Artillery projectiles include high explosive, fragmentation, incendiary, smoke, and improved conventional munitions. Larger-caliber warheads add nuclear, chemical, and submunition capability to conventional forces. Submunitions include antitank and antipersonnel mines, chemical bomblets, and fuel-air explosives. Limited-use munitions are used for marking, electronic jamming, reconnaissance, psychological warfare, and nonnuclear electromagnetic pulse rounds.

THREAT TO AIRCRAFT

1-34. Missiles, guns, directed-energy weapons, and electronic countermeasures represent threats against fixed- and rotary-wing aircraft used for logistics as well as combat aircraft. Aircraft entering the maintenance facility may contain unexploded ordnance or CBR contamination.

MISSILES

1-35. Tactical missiles can reach targets throughout the theater army area. FROG, short-range ballistic missiles, and cruise missiles are becoming more common among regional military powers. Missiles can deliver the full variety of conventional and CBR munitions

from land, surface ships, and submarines. Missiles and rockets of diverse origin are available in quantity and lend themselves to single or mass launches.

DIRECTED-ENERGY WEAPONS

1-36. Directed-energy weapons use amplified, pulsed-light, microwave, or millimeter wave frequencies to disrupt or destroy controls, sensors, structures, or personnel. Current non-weapon lasers can damage night vision devices and optics and can cause eye damage. Future applications of DEW and radio frequency and particle beam weapons are expected to inflict structural damage. DEW presents severe problems for unshielded electronic components such as fly-by-wire systems and computers.

ARMOR

1-37. Threat force armor units may operate in our support areas when exploiting success in battle. Combat operations doctrine expects this situation on the fluid battlefield of tomorrow. Tanks (100mm to 125mm guns), infantry fighting vehicles (20mm to 73mm automatic cannon/gun), self-propelled artillery, and armored personnel carriers mounting heavy machine guns or grenade launchers may attack aviation maintenance units.

INFANTRY

1-38. Infantry-type units (special forces, rangers, naval infantry, and guerrillas) and saboteurs or terrorists pose a threat to facilities, aircraft, supplies, and lines of communication. Large groups of infantry are likely to target high-priority targets that are lightly defended or easy to destroy. Stealthy forces can operate relatively freely in rear areas and attack with little warning. Though man-portable, their weapons will be quite lethal. Rocket-propelled grenades, antitank guided missiles, light antitank weapons, and recoilless rifles provide heavy punch to light forces. Terrorists, saboteurs, and snipers may be a persistent and deadly threat to aviation maintenance units.